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8-19-09

COVINGTON & BURLING LLP

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August 18, 2009

**BY FEDERAL EXPRESS**

Federal Communications Commission  
Media Bureau  
P.O. Box 979089  
St. Louis, MO 63197-9000

**Attn: Video Division, Media Bureau**

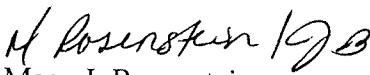
**Re: KLOK(AM), San Jose, CA  
Facility ID: 41339  
FRN: 0004946141**

**Application for AM Broadcast Station**

Transmitted herewith, on behalf of Univision Radio License Corporation, the licensee of KLOK(AM), San Jose, California, are an original and three copies of the station's Application for AM Broadcast Station License on FCC Form 302-AM, together with an executed Form 159 Remittance Advice to cover the requisite filing fee. Also enclosed is an additional copy of the Application to be stamped as received and returned in the self-addressed pre-paid envelope provided.

Please direct any questions regarding this matter to the undersigned.

Respectfully submitted,

  
Mace J. Rosenstein

*Counsel for Univision Radio License Corporation*

FOR  
FCC  
USE  
ONLY

**FCC 302-AM**  
**APPLICATION FOR AM**  
**BROADCAST STATION LICENSE**

(Please read instructions before filling out form.)

FOR COMMISSION USE ONLY

FILE NO.

*BZ-20090819AHK*

**SECTION I - APPLICANT FEE INFORMATION**

1. PAYOR NAME (Last, First, Middle Initial)

Covington & Burling LLP

MAILING ADDRESS (Line 1) (Maximum 35 characters)

1201 Pennsylvania Avenue, NW

MAILING ADDRESS (Line 2) (Maximum 35 characters)

CITY

Washington

STATE OR COUNTRY (if foreign address)

DC

ZIP CODE

20004

TELEPHONE NUMBER (include area code)

(202) 662-5023

CALL LETTERS

KLOK

OTHER FCC IDENTIFIER (If applicable)

41339

2. A. Is a fee submitted with this application?



Yes



No

B. If No, indicate reason for fee exemption (see 47 C.F.R. Section



Governmental Entity



Noncommercial educational licensee



Other (Please explain):

C. If Yes, provide the following information:

Enter in Column (A) the correct Fee Type Code for the service you are applying for. Fee Type Codes may be found in the "Mass Media Services Fee Filing Guide." Column (B) lists the Fee Multiple applicable for this application. Enter fee amount due in Column (C).

(A)

FEE TYPE CODE		
M	M	R

(B)

FEE MULTIPLE			
0	0	0	1

(C)

FEE DUE FOR FEE TYPE CODE IN COLUMN (A)
\$ 615

FOR FCC USE ONLY

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To be used only when you are requesting concurrent actions which result in a requirement to list more than one Fee Type Code.

(A)

M	O	R
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(B)

0	0	0	1
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(C)

\$ 705
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FOR FCC USE ONLY

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ADD ALL AMOUNTS SHOWN IN COLUMN C, AND ENTER THE TOTAL HERE. THIS AMOUNT SHOULD EQUAL YOUR ENCLOSED REMITTANCE.

TOTAL AMOUNT REMITTED WITH THIS APPLICATION

\$ 1320

FOR FCC USE ONLY

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<b>SECTION II - APPLICANT INFORMATION</b>		
1. NAME OF APPLICANT <b>UNIVISION RADIO LICENSE CORPORATION</b>		
MAILING ADDRESS <b>5999 CENTER DRIVE</b>		
CITY <b>Los Angeles</b>	STATE <b>CA</b>	ZIP CODE <b>90045</b>

2. This application is for:

- ☐ Commercial
 ☐ Noncommercial  
☒ AM Directional
 ☐ AM Non-Directional

Call letters <b>KLOK</b>	Community of License <b>San Jose</b>	Construction Permit File No. <b>N/A</b>	Modification of Construction Permit File No(s). <b>N/A</b>	Expiration Date of Last Construction Permit <b>N/A</b>
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3. Is the station now operating pursuant to automatic program test authority in accordance with 47 C.F.R. Section 73.1620?

☐ Yes ☐ No

If No, explain in an Exhibit.

Exhibit No. <b>N/A</b>
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4. Have all the terms, conditions, and obligations set forth in the above described construction permit been fully met?

☐ Yes ☐ No

If No, state exceptions in an Exhibit.

Exhibit No. <b>N/A</b>
---------------------------

5. Apart from the changes already reported, has any cause or circumstance arisen since the grant of the underlying construction permit which would result in any statement or representation contained in the construction permit application to be now incorrect?

☐ Yes ☐ No

If Yes, explain in an Exhibit.

Exhibit No.
-------------

6. Has the permittee filed its Ownership Report (FCC Form 323) or ownership certification in accordance with 47 C.F.R. Section 73.3615(b)?

☐ Yes ☐ No

☒ Does not apply

If No, explain in an Exhibit.

Exhibit No.
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7. Has an adverse finding been made or an adverse final action been taken by any court or administrative body with respect to the applicant or parties to the application in a civil or criminal proceeding, brought under the provisions of any law relating to the following: any felony; mass media related antitrust or unfair competition; fraudulent statements to another governmental unit; or discrimination?

☐ Yes ☒ No

If the answer is Yes, attach as an Exhibit a full disclosure of the persons and matters involved, including an identification of the court or administrative body and the proceeding (by dates and file numbers), and the disposition of the litigation. Where the requisite information has been earlier disclosed in connection with another application or as required by 47 U.S.C. Section 1.65(c), the applicant need only provide: (i) an identification of that previous submission by reference to the file number in the case of an application, the call letters of the station regarding which the application or Section 1.65 information was filed, and the date of filing; and (ii) the disposition of the previously reported matter.

Exhibit No.
-------------

8. Does the applicant, or any party to the application, have a petition on file to migrate to the expanded band (1605-1705 kHz) or a permit or license either in the existing band or expanded band that is held in combination (pursuant to the 5 year holding period allowed) with the AM facility proposed to be modified herein?

☐ Yes ☒ No

If Yes, provide particulars as an Exhibit.

Exhibit No.

The APPLICANT hereby waives any claim to the use of any particular frequency or of the electromagnetic spectrum as against the regulatory power of the United States because use of the same, whether by license or otherwise, and requests and authorization in accordance with this application. (See Section 304 of the Communications Act of 1934, as amended).

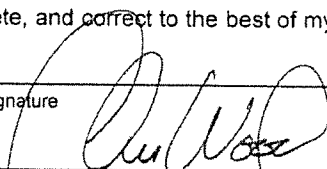
The APPLICANT acknowledges that all the statements made in this application and attached exhibits are considered material representations and that all the exhibits are a material part hereof and are incorporated herein as set out in full in

#### CERTIFICATION

1. By checking Yes, the applicant certifies, that, in the case of an individual applicant, he or she is not subject to a denial of federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. Section 862, or, in the case of a non-individual applicant (e.g., corporation, partnership or other unincorporated association), no party to the application is subject to a denial of federal benefits that includes FCC benefits pursuant to that section. For the definition of a "party" for these purposes, see 47 C.F.R. Section 1.2002(b).

☒ Yes ☐ No

2. I certify that the statements in this application are true, complete, and correct to the best of my knowledge and belief, and are made in good faith.

Name Christopher G. Wood	Signature 	
Title Vice President and Senior Legal Counsel	Date August 13, 2009	Telephone Number (310) 348-3600

**WILLFUL FALSE STATEMENTS ON THIS FORM ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT (U.S. CODE, TITLE 18, SECTION 1001), AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION**

#### FCC NOTICE TO INDIVIDUALS REQUIRED BY THE PRIVACY ACT AND THE PAPERWORK REDUCTION ACT

The solicitation of personal information requested in this application is authorized by the Communications Act of 1934, as amended. The Commission will use the information provided in this form to determine whether grant of the application is in the public interest. In reaching that determination, or for law enforcement purposes, it may become necessary to refer personal information contained in this form to another government agency. In addition, all information provided in this form will be available for public inspection. If information requested on the form is not provided, the application may be returned without action having been taken upon it or its processing may be delayed while a request is made to provide the missing information. Your response is required to obtain the requested authorization.

Public reporting burden for this collection of information is estimated to average 639 hours and 53 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, can be sent to the Federal Communications Commission, Records Management Branch, Paperwork Reduction Project (3060-0627), Washington, D. C. 20554. Do NOT send completed forms to this address.

THE FOREGOING NOTICE IS REQUIRED BY THE PRIVACY ACT OF 1974, P.L. 93-579, DECEMBER 31, 1974, 5 U.S.C. 552a(e)(3), AND THE PAPERWORK REDUCTION ACT OF 1980, P.L. 96-511, DECEMBER 11, 1980, 44 U.S.C. 3507.

**SECTION III - LICENSE APPLICATION ENGINEERING DATA**

Name of Applicant

Univision Radio License Corporation

PURPOSE OF AUTHORIZATION APPLIED FOR: (check one)



Station License



Direct Measurement of Power

**1. Facilities authorized in construction permit**

Call Sign	File No. of Construction Permit (if applicable)	Frequency (kHz)	Hours of Operation	Power in kilowatts	
KLOK		1170	unlimited	Night 5	Day 50

**2. Station location**

State	City or Town
California	San Jose

**3. Transmitter location**

State	County	City or Town	Street address (or other identification)
CA	Santa Clara	San Jose	2905 S. King Road

**4. Main studio location**

State	County	City or Town	Street address (or other identification)
CA	San Francisco	San Francisco	750 Battery Street

**5. Remote control point location (specify only if authorized directional antenna)**

State	County	City or Town	Street address (or other identification)

6. Has type-approved stereo generating equipment been installed?



Yes



No

7. Does the sampling system meet the requirements of 47 C.F.R. Section 73.68?



Yes



No



Not Applicable

Attach as an Exhibit a detailed description of the sampling system as installed.

 Exhibit No.  
"Engineering"

**8. Operating constants:**

RF common point or antenna current (in amperes) without modulation for night system	9.5	RF common point or antenna current (in amperes) without modulation for day system	29.6
Measured antenna or common point resistance (in ohms) at operating frequency		Measured antenna or common point reactance (in ohms) at operating frequency	
Night 60.0	Day 60.0	Night 0	Day 0

**Antenna indications for directional operation**

Towers	Antenna monitor Phase reading(s) in degrees		Antenna monitor sample current ratio(s)		Antenna base currents	
	Night	Day	Night	Day	Night	Day
1	-84.7°	+146.2°	0.485	0.633		
2	0.0°	-57.0°	1.000	0.674		
3	+88.1°	0.0°	0.570	1.000		

Manufacturer and type of antenna monitor:

SECTION III - Page 2

9. Description of antenna system ((f directional antenna is used, the information requested below should be given for each element of the array. Use separate sheets if necessary.)

Type Radiator <b>Uniform cross-section Guyed</b>	Overall height in meters of radiator above base insulator, or above base, if grounded.  <b>66.9</b>	Overall height in meters above ground (without obstruction lighting)  <b>68.6</b>	Overall height in meters above ground (include obstruction lighting)  <b>69.2</b>	If antenna is either top loaded or sectionalized, describe fully in an Exhibit.  <div>Exhibit No.</div>
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Excitation



Series



Shunt

Geographic coordinates to nearest second. For directional antenna give coordinates of center of array. For single vertical radiator give tower location.

North Latitude	<b>37<sup>o</sup></b>	<b>18'</b>	<b>41"</b>	West Longitude	<b>121<sup>o</sup></b>	<b>48'</b>	<b>58"</b>
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If not fully described above, attach as an Exhibit further details and dimensions including any other antenna mounted on tower and associated isolation circuits.

Exhibit No.  
"Engineering"

Also, if necessary for a complete description, attach as an Exhibit a sketch of the details and dimensions of ground system.

Exhibit No.  
"Engineering"

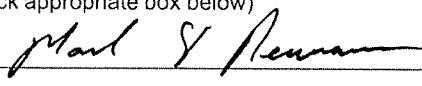
10. In what respect, if any, does the apparatus constructed differ from that described in the application for construction permit or in the permit?

None

11. Give reasons for the change in antenna or common point resistance.

Final adjustments resulted in slight changes from previous common point resistance.

I certify that I represent the applicant in the capacity indicated below and that I have examined the foregoing statement of technical information and that it is true to the best of my knowledge and belief.

Name (Please Print or Type) <b>Mark D. Neumann, P.E.</b>	Signature (check appropriate box below) 
Address (include ZIP Code) <b>Hammett &amp; Edison, Inc. Box 280068 San Francisco, California 94128</b>	Date <b>August 11, 2009</b>
	Telephone No. (Include Area Code) <b>707/996-5200</b>

☐

Technical Director



Registered Professional Engineer

☐

Chief Operator

☐

Technical Consultant

☐

Other (specify)

**Radio Station KLOK • 1170 kHz, 50 kW Day, 5 kW Night, DA2  
San Jose, California**

**Statement of Hammett & Edison, Inc., Consulting Engineers**

The firm of Hammett & Edison, Inc., Consulting Engineers, has been retained by Univision Radio License Corporation, licensee of Radio Station KLOK, 1170 kHz, San Jose, California, to prepare the engineering portion of an application to relicense that station under the new method-of-moment technique allowed under FCC Rules Section 73.151(c).

**Background**

Radio Station KLOK, FCC Facility ID No. 41339, broadcasts at 50 kW day and 5 kW night, DA2, from an existing site in San Jose, California. The broadcast facility is located in a congested urban area where constant construction over the last 20 years has presented an ongoing problem with maintaining the KLOK monitoring points. As a result, the license has elected to take advantage of the most recent changes to FCC Rules Section 73.151(c), allowing use of moment method computer modeling to relicense the KLOK daytime and nighttime arrays. The KLOK tower base parameters have been determined to be in accordance with the requirements of that rule section and the phasing system has been adjusted to produce antenna monitor parameters within the required  $\pm 5$  percent in ratio and  $\pm 3$  degrees in phase of the modeled value. A summary of the KLOK site and facility information is given in Figures 1–3.

**Array Geometry**

The KLOK site layout is provided in Figure 2A. The final “as-built” tower positions are provided in the included Certified Survey (Figure 2B). The deviation in tower positions from their theoretical locations, when converted to electrical degrees at 1170 kHz, is less than  $1^\circ$  in relative position.

**Impedance Measurements**

Tower base impedance measurements were made by the undersigned at the final J-plugs within the antenna tuning units (“ATUs”) using an Array Solutions PowerAim 120, S/N 1008, network analyzer. The other towers were all open circuited at the final J-plugs for each of the measurements.



**Radio Station KLOK • 1170 kHz, 50 kW Day, 5 kW Night, DA2  
San Jose, California**

**Method of Moments Model**

A method-of-moments model was created for each tower with the other towers opened at the base using Expert MININEC Broadcast Professional, Version 12.5. A  $-j10,000\ \Omega$  load was used for the assumed stray capacitance to ground. The method-of-moments model meets all FCC Rule requirements for model tower radius, height, and segment length, and calculation reference point, maximum hook-up inductance, and maximum shunt capacitance.

Tower	Physical Height*	Modeled Height*	Modeled Percentage	Modeled Radius	Circumference versus Total Face Width
1	94.0°	100.0°	106%	0.29 m	100%
2	94.0°	100.0°	106%	0.44	100%
3	94.0°	99.0°	105%	0.29	100%

Tower	Hook-up Inductance	Equivalent Inductor	Z <sub>ATU</sub> Modeled	Z <sub>ATU</sub> Measured
1	30.9 $\Omega$	3.7 $\mu$ H	59.8 + j100.6 $\Omega$	60.0 + 100.0 $\Omega$
2	28.4	3.4	59.0 + 96.1	59.4 + 96.0
3	23.4	2.8	57.5 + 88.4	57.2 + j88.7

The modeled and measured base impedances at the ATU output jacks with the other towers open-circuited at their ATU output jacks agree within  $\pm 2$  ohms and  $\pm 4$  percent for resistance, as required by the FCC Rules. The MININEC Broadcast Pro model summaries for the three KLOK towers are provided in Figure 4.

**Derivation of Base Parameters**

The array of towers was modeled using Expert MININEC Broadcast Professional, Version 12.5. The wire end points were specified using polar coordinates with distances in electrical degrees at 1170 kHz. Each tower was modeled using 12 segments for individual segment lengths of 8.3°. The individual tower characteristics were adjusted, as noted above, to match the measured ATU output impedance. The permitted field parameters for the KLOK daytime and nighttime arrays were used with the “Medium Wave Array Synthesis” feature of MININEC to derive the driving point parameters at the ATU output where the current sampling transformers are installed.

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\* In degrees at 1170 kHz.





**Radio Station KLOK • 1170 kHz, 50 kW Day, 5 kW Night, DA2  
San Jose, California**

**Daytime Base Parameters**

The MININEC Broadcast Pro model summary for the KLOK daytime array is provided in Figure 5. Absolute and relative tower base currents and phases are calculated to be:

<u>Tower</u>	<u>Magnitude</u>	<u>Absolute Phase</u>	<u>Ratio</u>	<u>Relative Phase</u>
1	12.60 A	+8.1°	0.633	+146.2°
2	13.41	+164.9°	0.674	-57.0°
3	19.91	+221.9°	1.000	0.0°

**Daytime Antenna Monitor Parameters**

Based upon the results provided by MININEC, the array was adjusted and the antenna monitor parameters were set as follows:

<u>Tower</u>	<u>Ratio</u>	<u>Phase</u>
1	0.623	+146.2°
2	0.675	-57.2°
3	1.000	0.0°

**Nighttime Base Parameters**

The MININEC Broadcast Pro model summary for the KLOK nighttime array is provided in Figure 6. Absolute and relative tower base currents and phases are calculated to be:

<u>Tower</u>	<u>Magnitude</u>	<u>Absolute Phase</u>	<u>Ratio</u>	<u>Relative Phase</u>
1	3.44 A	+282.8°	0.485	-84.7°
2	7.09	+7.5°	1.000	0.0°
3	4.04	+95.6°	0.570	+88.1°

**Nighttime Antenna Monitor Parameters**

Based upon the results provided by MININEC, the array was adjusted and the antenna monitor parameters were set as follows:

<u>Tower</u>	<u>Ratio</u>	<u>Phase</u>
1	0.488	-84.1°
2	1.000	0.0°
3	0.560	+88.0°

Upon completion of the KLOK adjustments, the common point impedance for the KLOK daytime and nighttime arrays were measured by the undersigned using Array Solutions PowerAim 120, S/N 1008 network analyzer. Both common points were adjusted to  $60 + j0 \Omega$  and the common point currents were set to 29.6 A for the KLOK 50 kW daytime operations and 9.5 A for the KLOK 5 kW nighttime operation.



**Radio Station KLOK • 1170 kHz, 50 kW Day, 5 kW Night, DA2  
San Jose, California**

**Sample System Proof**

Impedance measurements were made of the antenna monitor sampling system by the undersigned, using an Array Solutions PowerAim 120, S/N 1008 network analyzer in a calibrated measurement system. The measurements were made into the antenna monitor ends of the sampling lines open-circuited to obtain line lengths and with the Delta TCT-1 current sampling transformers connected. In order to determine the characteristic impedance values of the sampling lines, open-circuit measurements were made with frequencies offset to produce  $\pm 45^\circ$  of electrical length from resonance frequency nearest to carrier (1016.9 kHz).

The sample lines meet all requirements of the FCC rules. They are within  $1^\circ$  of electrical length and the characteristic impedances are within 2 ohms of the nominal value. The sample line measurements made with the toroids connected are all within  $0.1 \Omega$  of each other.

The current sampling transformers were calibrated using the AM-19 antenna monitor. All three toroidal transformers were installed on a single bus and connected with equal length sample lines to the AM-19 antenna monitor. With one toroid set to reference (Ratio/Phase = 1.000/0.0°), the antenna monitor readings for both of the other toroids were 1.000/0.0° and 1.000/0.1°, well within the manufacturer's specifications. Complete sample system proof results are provided in Figure 7.

**Reference Field Strength Measurements**

Reference field strength measurements were made by the undersigned on July 31, 2009, using a Potomac Instruments Model FIM-41 field strength meter, S/N 319, on the azimuths for the four daytime and four nighttime radials specified in the KLOK license as monitor point radials. Point descriptions and field strengths are provided in Figure 8.

**Spurious Emissions Measurements**

Emission measurements were made by the undersigned on May 21, 2009, using a Rohde & Schwarz spectrum analyzer, Model FSL6, S/N 100183, and a Potomac Instruments FIM 41 field strength meter, S/N 319, both under current calibration by the manufacturer. Measurements were made with KLOK operating at full power in daytime and nighttime modes. Specific results are given in Figure 9. No emissions were found in excess of those allowed by Section 73.44 of the FCC Rules.



**Radio Station KLOK • 1170 kHz, 50 kW Day, 5 kW Night, DA2  
San Jose, California**

**Radio Frequency Exposure**

No material changes were made to the KLOK licensed daytime or nighttime facilities other than minor changes in the antenna monitor parameters and the installation of new Delta Electronics Model TCT-1 current sampling transformers in the three ATUs. Therefore, no changes have been made in RF exposure conditions at the site with respect to presently licensed operation.

The entire KLOK site is fenced and the transmitter building is locked and accessible only to authorized personnel. The phasing cabinets are enclosed and interlocked so that access to the phasor is not available while the transmitter is in operation.

Based upon a maximum power in any of the KLOK towers of less than 25,000 watts, the distance to fields in excess of the FCC exposure limit applicable at 1170 kHz using the FCC Form 301 distance tables would be less than 13 feet for any tower.

The individual tower compounds are fenced out to a distance of 25 feet from each tower. The tower compound fences are six feet in height and have climbing deterrents installed. The compound gates are locked and appropriate warning signs are in place on the fences surrounding each tower compound.

Based on the information and analysis above, it is the undersigned's professional opinion that the KLOK broadcast site complies with the FCC guidelines limiting public exposure to radio frequency energy and, therefore, does not for this reason cause a significant impact on the environment.

**Conclusion**

The KLOK array has been adjusted and is operating in accordance with the requirements set forth in Section 73.151 of the Commission Rules. A grant of license under the new method-of-moment rules is, therefore, requested.



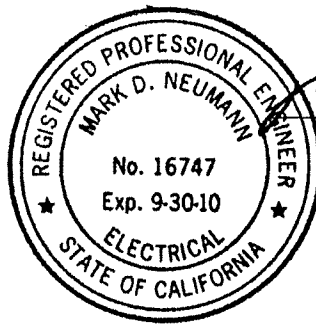
**Radio Station KLOK • 1170 kHz, 50 kW Day, 5 kW Night, DA2  
San Jose, California**

**List of Figures**

In carrying out these engineering studies, the following attached figures were prepared under my direct supervision:

1. Engineering specifications of system as installed
2. Antenna system drawing
3. Circuit diagram
4. Tower method-of-moments model data
5. Daytime array method-of-moments model data
6. Nighttime array method-of-moments model data
7. Sample system proof
8. Reference point measurements
9. Harmonic and spurious measurements.

August 11, 2009



*Mark D. Neumann*  
Mark D. Neumann, P.E.



**HAMMETT & EDISON, INC.**  
CONSULTING ENGINEERS  
SAN FRANCISCO

**Radio Station KLOK • 1170 kHz, 50 kW Day, 5 kW Night, DA2  
San Jose, California**

**Engineering Specifications As Installed**

**A. Transmitter Site**

Geographical Coordinates	37° 18' 41" N
(NAD27)	121° 48' 58" W

2905 South King Road, San Jose, California

**B. Studio & Remote Control Point**

750 Battery Street, San Francisco, California

**C. Equipment**

Transmitter	Day, Nautel XL-60	50 kW
	Night, Nautel ND-5	5 kW
Antenna monitor	Potomac, Model AM-19	

**D. Operation**

Frequency	1170 kHz
Power	50 kW/5 kW
Hours of operation	Unlimited
Mode of operation	DA2

**E. Antenna System**

Number of towers	Three
Type of towers	Uniform cross-section, guyed
Elevation of site above mean sea level	45.7 m
Height of towers above base insulator	66.9 m
Overall height of towers above ground	69.2 m*
Overall height of towers above mean sea level	114.9 m*
Orientation of towers	See Figure 2
Field ratio and phase of towers	See Figure 1B
Ground system	See Figure 2

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\* Unlighted center tower is 68.6 m AGL and 114.3 m AMSL, respectively.



**Radio Station KLOK • 1170 kHz, 50 kW Day, 5 kW Night, DA2  
San Jose, California**

**Engineering Specifications As Installed**

**Daytime Theoretical Field Parameters**

	<u>Tower 1</u>	<u>Tower 2</u> (reference)	<u>Tower 3</u>
Field ratio	1.000	1.000	1.300
Phase	0.0°	155.0°	-145.0°

**Daytime Calculated Base Parameters†**

	<u>Tower 1</u>	<u>Tower 2</u>	<u>Tower 3</u> (reference)
Field ratio	0.633	0.674	1.000
Phase	+146.2°	-57.0°	0.0°

**Daytime Antenna Monitor Parameters‡**

	<u>Tower 1</u>	<u>Tower 2</u>	<u>Tower 3</u>
Field ratio	0.623	0.675	1.000
Phase	+146.2°	-57.2°	0.0°

Measured common point or base impedance	60 ohms
Common point or base current	29.6 A
Common point or input power	52.65 kW

† Calculated Parameters have been referenced versus Tower 3 in order to make the maximum field ratio 1.000 for direct comparison with the Operating Parameters.

‡ As adjusted.



**Radio Station KLOK • 1170 kHz, 50 kW Day, 5 kW Night, DA2  
San Jose, California**

**Engineering Specifications As Installed**

**Nighttime Theoretical Field Parameters**

	<u>Tower 1</u>	<u>Tower 2</u>	<u>Tower 3</u>
Field ratio	1.000	1.920	1.000
Phase	-93.0°	0.0°	+93.0°

**Nighttime Calculated Base Parameters§**

	<u>Tower 1</u>	<u>Tower 2</u> (reference)	<u>Tower 3</u>
Field ratio	0.485	1.000	0.570
Phase	-84.7°	0.0°	+88.1°

**Nighttime Antenna Monitor Parameters\*\***

	<u>Tower 1</u>	<u>Tower 2</u>	<u>Tower 3</u>
Field ratio	0.488	1.000	0.560
Phase	-84.1°	0.0°	+88.0°

Measured common point or base impedance	60 ohms
Common point or base current	9.5 A
Common point or input power	5.4 kW

---

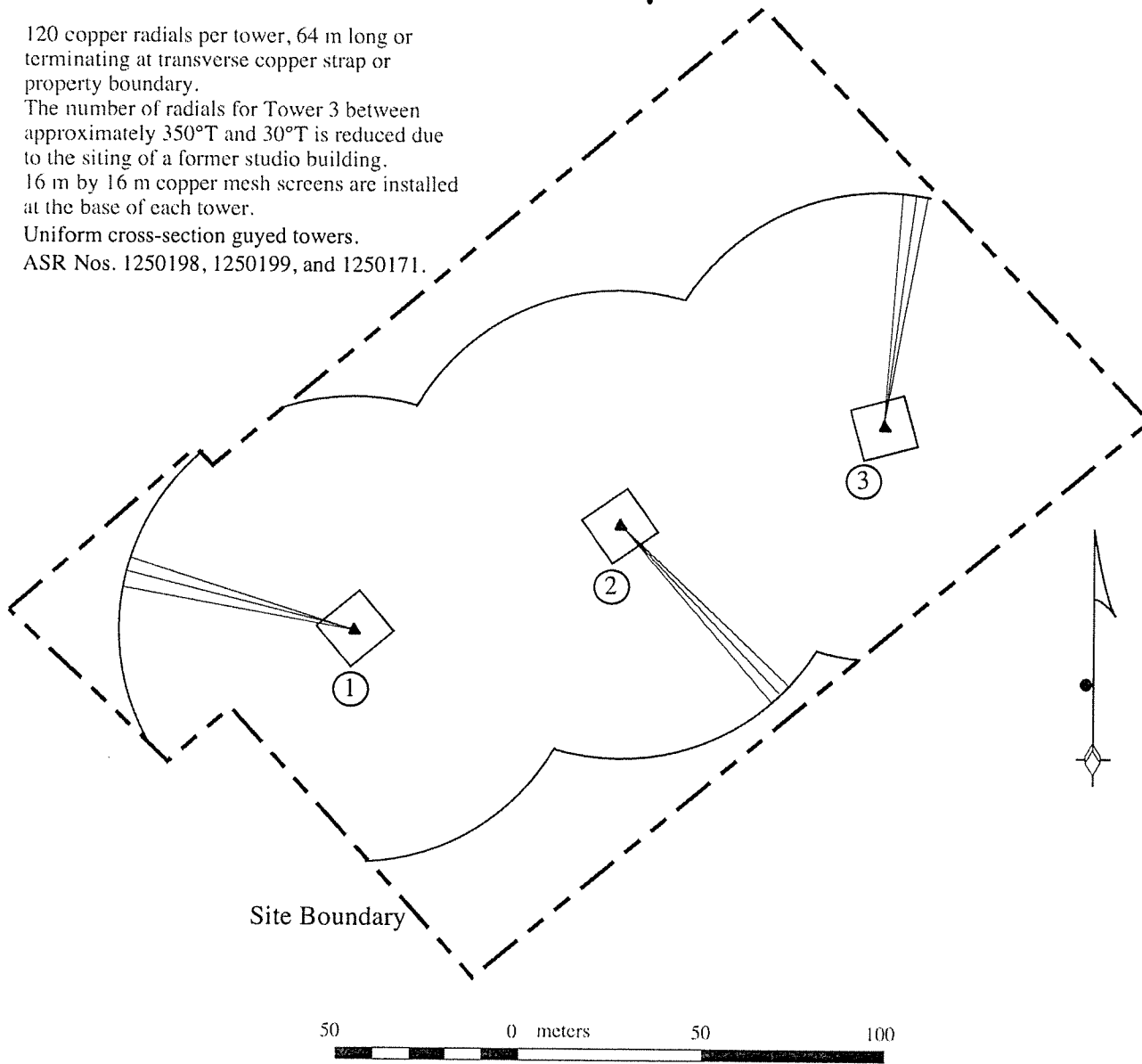
§ Calculated Parameters have been referenced versus Tower 2 in order to make the maximum field ratio 1.000 for direct comparison with the Operating Parameters.

\*\* As adjusted.



..... • 1170 kHz, 50 • .....  
 .....  
 .....

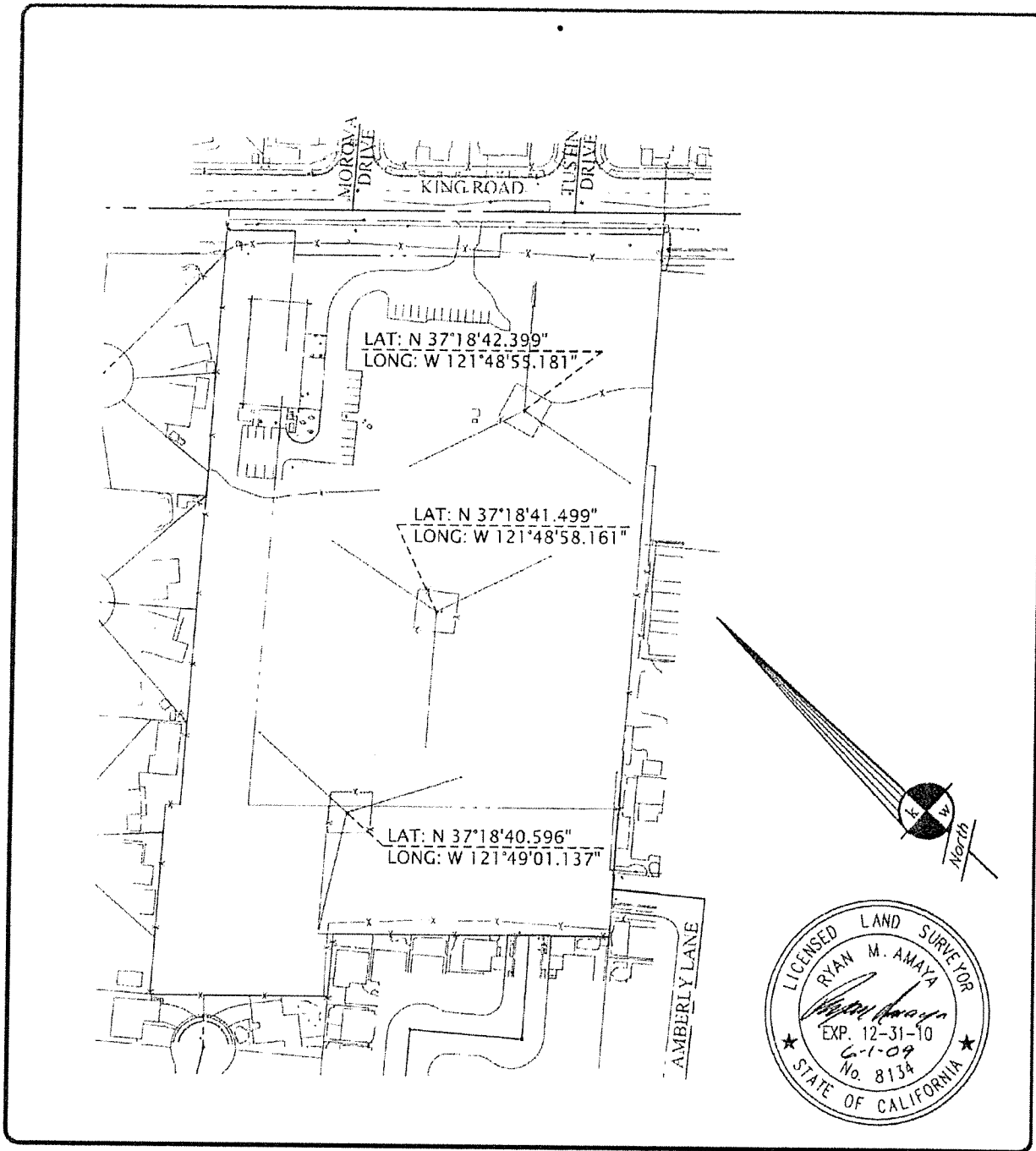
120 copper radials per tower, 64 m long or terminating at transverse copper strap or property boundary.  
 The number of radials for Tower 3 between approximately 350°T and 30°T is reduced due to the siting of a former studio building.  
 16 m by 16 m copper mesh screens are installed at the base of each tower.  
 Uniform cross-section guyed towers.  
 ASR Nos. 1250198, 1250199, and 1250171.




Tower	Permitted Array Geometry		Survey Results From Figure 2B		Deviation from Specified Location	
	Bearing	Distance	Bearing	Distance	Bearing	Distance
1	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
2	70.0°	110.0°	69.2°	110.1°	0.8°	0.1°
3	70.0°	220.0°	69.2°	220.0°	0.8°	0.0°



• • • • • 1170 kHz, 50 • • • • •  
 • • • • •  
 • • • • •



<b>RADIO TOWER EXHIBIT</b> FOR: UNIVISION RADIO		DATE	JUNE 2009
SAN JOSE		SCALE	1"=150'
CALIFORNIA		DR. BY	SB
<b>NAD 27 DATUM</b> (LATITUDE & LONGITUDE)		JOB	A03228-4
 <b>KIER &amp; WRIGHT</b> CIVIL ENGINEERS & SURVEYORS, INC. 3350 Scott Boulevard, Building 22 Santa Clara, California 95054 (408) 727 6665 fax (408) 727 5641		SHEET NO.	1 OF 1



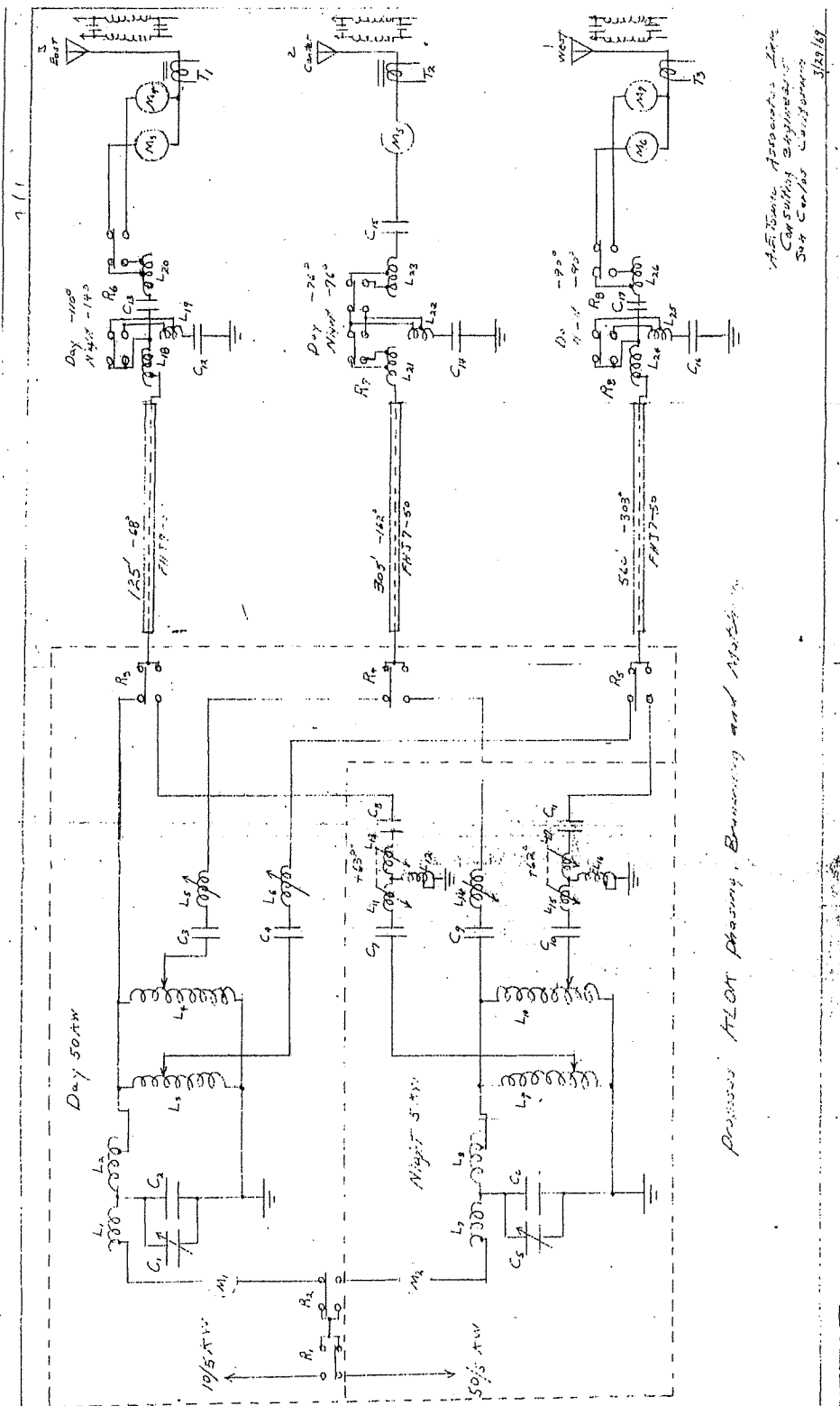
**HAMMETT & EDISON, INC.**  
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090807  
 Figure 2B

• • • • • 1170 kHz, 50 • • • • •

• • • • •

• • • • •



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Figure 3

**Radio Station KLOK • 1170 kHz, 50 kW Day, 5 kW Night, DA2  
San Jose, California**

**Individual Tower Method-of-Moments Modeling Data**

**Tower 1**

C:\Expert MININEC Broadcast Professional\Files\KLOK\_TWR1 07-17-2009 07:34:05

KLOK Tower 1

**GEOMETRY**

Wire coordinates in degrees; other dimensions in meters  
Environment: perfect ground

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.29	12
		0	0	100.		
2	none	110.	70.	0	.44	12
		110.	70.	100.		
3	none	220.	70.	0	.29	12
		220.	70.	99.		

Number of wires = 3  
current nodes = 36

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	3	8.25	1	8.33333
radius	1	.29	2	.44

**ELECTRICAL DESCRIPTION**

Frequencies (MHz)

frequency		no. of steps	segment length (wavelengths)		
no. lowest	step		minimum	maximum	
1	1.17	0	1	.0229167	.0231481

**Sources**

source	node	sector	magnitude	phase	type
1	1	1	1.	0	current

**Lumped loads**

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	13	0	-10,000.	0	0	0
2	25	0	-10,000.	0	0	0
3	1	0	0	.0037	0	0

Resistivity (ohm-meter) = 0.0000002

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**IMPEDANCE**

normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 1, sector 1							
1.17	59.807	100.59	117.02	59.3	5.2242	-3.3668	-2.6809



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Figure 4A

**Radio Station KLOK • 1170 kHz, 50 kW Day, 5 kW Night, DA2  
San Jose, California**

**Individual Tower Method-of-Moments Modeling Data**

C:\Expert MININEC Broadcast Professional\Files\KLOK\_TWR1 08-07-2009 07:51:23

CURRENT rms

Frequency = 1.17 MHz

Input power = 29.9035 watts

Efficiency = 99.94 %

coordinates in degrees

no.	X	Y	Z	mag (amps)	phase (deg)	real (amps)	imaginary (amps)
GND	0	0	0	.707107	0	.707107	0
2	0	0	8.33333	.745705	357.3	.744859	-.0355033
3	0	0	16.6667	.755852	355.7	.753712	-.0568355
4	0	0	25.	.747451	354.5	.743961	-.0721419
5	0	0	33.3333	.721914	353.5	.717204	-.0823291
6	0	0	41.6667	.680224	352.6	.674542	-.0877329
7	0	0	50.	.623325	351.8	.617006	-.0885298
8	0	0	58.3333	.552275	351.2	.545716	-.0848648
9	0	0	66.6667	.468211	350.5	.461855	-.0768837
10	0	0	75.	.372233	350.	.366561	-.0647342
11	0	0	83.3333	.265093	349.5	.260618	-.0485027
12	0	0	91.6667	.146261	349.	.14355	-.028026
END	0	0	100.	0	0	0	0
GND	37.6222	-103.366	0	2.65E-03	207.4	-2.35E-03	-1.22E-03
14	37.6222	-103.366	8.33333	.0288868	207.4	-.0256463	-.0132935
15	37.6222	-103.366	16.6667	.0435685	207.4	-.0386821	-.0200478
16	37.6222	-103.366	25.	.0538888	207.4	-.0478465	-.0247935
17	37.6222	-103.366	33.3333	.0605327	207.4	-.0537478	-.0278459
18	37.6222	-103.366	41.6667	.0637926	207.4	-.0566452	-.0293396
19	37.6222	-103.366	50.	.0638332	207.4	-.0566851	-.0293509
20	37.6222	-103.366	58.3333	.0607913	207.4	-.0539888	-.0279426
21	37.6222	-103.366	66.6667	.0548021	207.4	-.0486759	-.025178
22	37.6222	-103.366	75.	.0459947	207.3	-.0408602	-.0211178
23	37.6222	-103.366	83.3333	.0344466	207.3	-.0306086	-.0158014
24	37.6222	-103.366	91.6667	.0200585	207.3	-.0178296	-9.19E-03
END	37.6222	-103.366	100.	0	0	0	0
GND	75.2444	-206.732	0	1.79E-03	101.5	-3.56E-04	1.75E-03
26	75.2444	-206.732	8.25	.0166976	101.4	-3.3E-03	.016368
27	75.2444	-206.732	16.5	.0256207	101.3	-5.02E-03	.0251243
28	75.2444	-206.732	24.75	.0319967	101.2	-6.2E-03	.0313905
29	75.2444	-206.732	33.	.036207	101.	-6.92E-03	.0355387
30	75.2444	-206.732	41.25	.0383925	100.9	-7.24E-03	.0377043
31	75.2444	-206.732	49.5	.0386249	100.7	-7.16E-03	.0379546
32	75.2444	-206.732	57.75	.0369604	100.5	-6.73E-03	.0363416
33	75.2444	-206.732	66.	.0334553	100.3	-5.98E-03	.0329168
34	75.2444	-206.732	74.25	.0281633	100.1	-4.93E-03	.0277293
35	75.2444	-206.732	82.5	.0211106	99.8	-3.61E-03	.0208005
36	75.2444	-206.732	90.75	.0122116	99.6	-2.03E-03	.0120416
END	75.2444	-206.732	99.	0	0	0	0



**HAMMETT & EDISON, INC.**  
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SAN FRANCISCO

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Figure 4B

**Radio Station KLOK • 1170 kHz, 50 kW Day, 5 kW Night, DA2  
San Jose, California**

**Individual Tower Method-of-Moments Modeling Data**

**Tower 2**

C:\Expert MININEC Broadcast Professional\Files\KLOK\_TWR2 07-17-2009 07:37:17

KLOK Tower 2

**GEOMETRY**

Wire coordinates in degrees; other dimensions in meters

Environment: perfect ground

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.29	12
		0	0	100.		
2	none	110.	70.	0	.44	12
		110.	70.	100.		
3	none	220.	70.	0	.29	12
		220.	70.	99.		

Number of wires = 3  
current nodes = 36

	minimum	maximum
Individual wires	wire value	wire value
segment length	3 8.25	1 8.33333
radius	1 .29	2 .44

**ELECTRICAL DESCRIPTION**

Frequencies (MHz)

no.	frequency	step	no. of steps	segment length (wavelengths)
				minimum maximum
1	1.17	0	1	.0229167 .0231481

**Sources**

source	node	sector	magnitude	phase	type
1	13	1	1.	0	current

**Lumped loads**

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	13	0	0	.0034	0	0
2	25	0	-10,000.	0	0	0
3	1	0	-10,000.	0	0	0

Resistivity (ohm-meter) = 0.0000002

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**IMPEDANCE**

normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 13, sector 1							
1.17	59.043	96.063	112.76	58.4	4.9516	-3.5572	-2.5246



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Figure 4C

**Radio Station KLOK • 1170 kHz, 50 kW Day, 5 kW Night, DA2  
San Jose, California**

**Individual Tower Method-of-Moments Modeling Data**

C:\Expert MININEC Broadcast Professional\Files\KLOK\_TWR2 08-07-2009 07:54:19

```

CURRENT rms
Frequency   = 1.17 MHz
Input power = 29.5215 watts
Efficiency  = 99.96 %
coordinates in degrees
current
no.      X      Y      Z      mag      phase  real      imaginary
      (amps) (deg) (amps) (amps)
GND      0      0      0      2.65E-03 207.4 -2.35E-03 -1.22E-03
 2      0      0      8.33333 .024834 207.4 -.0220491 -.0114265
 3      0      0     16.6667 .0380523 207.4 -.0337858 -.0175072
 4      0      0      25.    .0474131 207.4 -.0420978 -.0218122
 5      0      0     33.3333 .0534975 207.4 -.0475012 -.0246094
 6      0      0     41.6667 .0565361 207.4 -.0502003 -.026005
 7      0      0      50.    .0566625 207.4 -.0503138 -.0260606
 8      0      0     58.3333 .0539934 207.4 -.0479455 -.0248297
 9      0      0     66.6667 .0486497 207.4 -.0432027 -.0223678
10      0      0      75.    .0407522 207.4 -.0361926 -.0187307
11      0      0     83.3333 .0303844 207.3 -.0269885 -.0139584
12      0      0     91.6667 .017473 207.3 -.0155234 -8.02E-03
END      0      0     100.    0      0      0      0
GND     37.6222 -103.366 0      .707107 0      .707107 0
14     37.6222 -103.366 8.33333 .752394 356.8 .751251 -.0414548
15     37.6222 -103.366 16.6667 .764986 355.1 .762233 -.0648432
16     37.6222 -103.366 25.    .758387 353.8 .753995 -.0814969
17     37.6222 -103.366 33.3333 .734132 352.8 .728285 -.0924712
18     37.6222 -103.366 41.6667 .693272 351.9 .686283 -.0981931
19     37.6222 -103.366 50.    .636774 351.1 .629049 -.0988825
20     37.6222 -103.366 58.3333 .565688 350.4 .557704 -.0947078
21     37.6222 -103.366 66.6667 .481126 349.7 .473408 -.08583
22     37.6222 -103.366 75.    .384135 349.1 .37725 -.0724014
23     37.6222 -103.366 83.3333 .275347 348.6 .269902 -.05449
24     37.6222 -103.366 91.6667 .154085 348.1 .15075 -.0318846
END     37.6222 -103.366 100.    0      0      0      0
GND     75.2444 -206.732 0      2.6E-03 207.7 -2.3E-03 -1.21E-03
26     75.2444 -206.732 8.25   .0242034 207.7 -.0214246 -.01126
27     75.2444 -206.732 16.5   .0370534 207.7 -.0327998 -.0172374
28     75.2444 -206.732 24.75  .0461486 207.7 -.0408515 -.0214675
29     75.2444 -206.732 33.    .0520589 207.7 -.0460838 -.0242158
30     75.2444 -206.732 41.25  .0550108 207.7 -.0486975 -.0255879
31     75.2444 -206.732 49.5   .0551354 207.7 -.0488085 -.0256445
32     75.2444 -206.732 57.75  .0525455 207.7 -.0465168 -.024438
33     75.2444 -206.732 66.    .0473568 207.7 -.0419251 -.0220217
34     75.2444 -206.732 74.25  .0396836 207.7 -.0351344 -.018449
35     75.2444 -206.732 82.5   .0296027 207.7 -.0262122 -.0137566
36     75.2444 -206.732 90.75  .0170367 207.7 -.0150882 -7.91E-03
END     75.2444 -206.732 99.    0      0      0      0

```



**Radio Station KLOK • 1170 kHz, 50 kW Day, 5 kW Night, DA2  
San Jose, California**

**Individual Tower Method-of-Moments Modeling Data**

**Tower 3**

C:\Expert MININEC Broadcast Professional\Files\KLOK\_TWR3 07-17-2009 07:38:05

KLOK Tower 3

**GEOMETRY**

Wire coordinates in degrees; other dimensions in meters  
Environment: perfect ground

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.29	12
		0	0	100.		
2	none	110.	70.	0	.44	12
		110.	70.	100.		
3	none	220.	70.	0	.29	12
		220.	70.	99.		

Number of wires = 3  
current nodes = 36

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	3	8.25	1	8.33333
radius	1	.29	2	.44

**ELECTRICAL DESCRIPTION**

**Frequencies (MHz)**

frequency			no. of steps	segment length (wavelengths)	
no. lowest	step	minimum		maximum	
1	1.17	0	1	.0229167	.0231481

**Sources**

source	node	sector	magnitude	phase	type
1	25	1	1.	0	current

**Lumped loads**

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	13	0	-10,000.	0	0	0
2	25	0	0	.0028	0	0
3	1	0	-10,000.	0	0	0

Resistivity (ohm-meter) = 0.0000002

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**IMPEDANCE**

normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 25, sector 1							
1.17	57.511	88.368	105.43	56.9	4.5137	-3.9136	-2.2629



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Figure 4E

**Radio Station KLOK • 1170 kHz, 50 kW Day, 5 kW Night, DA2  
San Jose, California**

**Individual Tower Method-of-Moments Modeling Data**

C:\Expert MININEC Broadcast Professional\Files\KLOK\_TWR3      08-07-2009      07:55:36

CURRENT rms

Frequency = 1.17 MHz

Input power = 28.7556 watts

Efficiency = 99.94 %

coordinates in degrees

current

no.	X	Y	Z	mag (amps)	phase (deg)	real (amps)	imaginary (amps)
GND	0	0	0	1.79E-03	101.5	-3.55E-04	1.75E-03
2	0	0	8.33333	.0168049	101.4	-3.32E-03	.0164741
3	0	0	16.6667	.0258088	101.3	-5.05E-03	.0253102
4	0	0	25.	.0322464	101.2	-6.24E-03	.0316376
5	0	0	33.3333	.0364993	101.	-6.97E-03	.0358281
6	0	0	41.6667	.0387073	100.8	-7.28E-03	.0380164
7	0	0	50.	.038942	100.7	-7.21E-03	.0382694
8	0	0	58.3333	.0372599	100.5	-6.77E-03	.0366394
9	0	0	66.6667	.0337193	100.3	-6.01E-03	.0331798
10	0	0	75.	.0283762	100.	-4.95E-03	.0279417
11	0	0	83.3333	.02126	99.8	-3.62E-03	.02095
12	0	0	91.6667	.0122889	99.5	-2.03E-03	.0121192
END	0	0	100.	0	0	0	0
GND	37.6222	-103.366	0	2.6E-03	207.7	-2.3E-03	-1.21E-03
14	37.6222	-103.366	8.33333	.0283321	207.7	-.0250811	-.0131775
15	37.6222	-103.366	16.6667	.0427291	207.7	-.0378261	-.0198737
16	37.6222	-103.366	25.	.0528464	207.7	-.0467825	-.0245794
17	37.6222	-103.366	33.3333	.0593566	207.7	-.0525458	-.0276069
18	37.6222	-103.366	41.6667	.0625472	207.7	-.055371	-.0290896
19	37.6222	-103.366	50.	.0625809	207.7	-.0554023	-.0291025
20	37.6222	-103.366	58.3333	.0595927	207.7	-.0527595	-.0277078
21	37.6222	-103.366	66.6667	.0537163	207.7	-.047561	-.0249678
22	37.6222	-103.366	75.	.045079	207.7	-.0399189	-.0209427
23	37.6222	-103.366	83.3333	.0337576	207.7	-.0298996	-.0156713
24	37.6222	-103.366	91.6667	.0196554	207.6	-.0174144	-9.11E-03
END	37.6222	-103.366	100.	0	0	0	0
GND	75.2444	-206.732	0	.707107	0	.707107	0
26	75.2444	-206.732	8.25	.742078	357.4	.741302	-.0339181
27	75.2444	-206.732	16.5	.749999	355.9	.748034	-.0542596
28	75.2444	-206.732	24.75	.740029	354.7	.736819	-.0688469
29	75.2444	-206.732	33.	.713509	353.7	.709172	-.0785518
30	75.2444	-206.732	41.25	.671363	352.8	.666125	-.0837002
31	75.2444	-206.732	49.5	.614519	352.1	.608687	-.0844625
32	75.2444	-206.732	57.75	.543995	351.4	.537935	-.080975
33	75.2444	-206.732	66.	.460886	350.8	.455008	-.0733772
34	75.2444	-206.732	74.25	.366242	350.3	.36099	-.0618029
35	75.2444	-206.732	82.5	.260763	349.8	.256614	-.0463291
36	75.2444	-206.732	90.75	.143882	349.3	.141366	-.0267905
END	75.2444	-206.732	99.	0	0	0	0





**Radio Station KLOK • 1170 kHz, 50 kW Day, 5 kW Night, DA2  
San Jose, California**

**Expert MININEC Broadcast Professional  
Daytime Method-of-Moments Modeling Data**

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MEDIUM WAVE ARRAY SYNTHESIS FROM FIELD RATIOS

Frequency = 1.17 MHz

	field ratio	
tower	magnitude	phase (deg)
1	1.	0
2	1.	155.
3	1.3	-145.

VOLTAGES AND CURRENTS - rms

source voltage			current	
node	magnitude	phase (deg)	magnitude	phase (deg)
1	2,367.49	71.5	12.564	8.2
13	1,902.7	217.7	13.3742	165.
25	1,707.93	267.3	19.8922	221.9

Sum of square of source currents = 1,464.85

Total power = 52,650. watts

TOWER ADMITTANCE MATRIX

admittance	real (mhos)	imaginary (mhos)
Y(1, 1)	.00471129	-.006683
Y(1, 2)	.00299077	9.0492E-05
Y(1, 3)	.000147503	-.00099249
Y(2, 1)	.00299078	9.0535E-05
Y(2, 2)	.0055954	-.00574914
Y(2, 3)	.00319596	.000243985
Y(3, 1)	.000147505	-.000992485
Y(3, 2)	.00319595	.000243975
Y(3, 3)	.00549868	-.0071265

TOWER IMPEDANCE MATRIX

impedance	real (ohms)	imaginary (ohms)
Z(1, 1)	59.8956	100.564
Z(1, 2)	17.2365	-32.9643
Z(1, 3)	-24.4781	-5.21652
Z(2, 1)	17.2359	-32.9644
Z(2, 2)	59.2677	95.9074
Z(2, 3)	17.0806	-32.2408
Z(3, 1)	-24.4781	-5.21636
Z(3, 2)	17.0807	-32.2408
Z(3, 3)	57.5965	88.3503



**Radio Station KLOK • 1170 kHz, 50 kW Day, 5 kW Night, DA2  
San Jose, California**

**Expert MININEC Broadcast Professional  
Daytime Method-of-Moments Modeling Data**

C:\Expert MININEC Broadcast Professional\Files\KLOK\_D 08-07-2009 08:54:53  
KLOK Day

**GEOMETRY**

Wire coordinates in degrees; other dimensions in meters  
Environment: perfect ground

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.29	12
		0	0	100.		
2	none	110.	70.	0	.44	12
		110.	70.	100.		
3	none	220.	70.	0	.29	12
		220.	70.	99.		

Number of wires = 3  
current nodes = 36

	minimum	maximum
Individual wires	wire value	wire value
segment length	3 8.25	1 8.33333
radius	1 .29	2 .44

**ELECTRICAL DESCRIPTION**

**Frequencies (MHz)**

no.	lowest	step	no. of steps	segment length (wavelengths)
	frequency			minimum maximum
1	1.17	0	1	.0229167 .0231481

**Sources**

source	node	sector	magnitude	phase	type
1	1	1	3,348.13	71.5	voltage
2	13	1	2,690.82	217.7	voltage
3	25	1	2,415.38	267.3	voltage

**Lumped loads**

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	13	0	0	.0034	0	0
2	25	0	0	.0028	0	0
3	1	0	0	.0037	0	0

Resistivity (ohm-meter) = 0.0000002

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**IMPEDANCE**

normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 1, sector 1							
1.17	86.231	172.58	192.92	63.5	9.1024	-1.9162	-4.4763



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Figure 5B

**Radio Station KLOK • 1170 kHz, 50 kW Day, 5 kW Night, DA2  
San Jose, California**

**Expert MININEC Broadcast Professional  
Daytime Method-of-Moments Modeling Data**

source = 2; node 13, sector 1  
1.17 88.012 116.06 145.65 52.8 5.1966 -3.3851 -2.6653

source = 3; node 25, sector 1  
1.17 61.874 62.677 88.073 45.4 2.9798 -6.0648 -1.2347

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CURRENT rms

Frequency = 1.17 MHz

Input power = 52,650. watts

Efficiency = 99.95 %

coordinates in degrees

current				mag	phase	real	imaginary
no.	X	Y	Z	(amps)	(deg)	(amps)	(amps)
GND	0	0	0	12.5969	8.1	12.4715	1.77306
2	0	0	8.33333	13.9693	4.5	13.9258	1.10243
3	0	0	16.6667	14.6001	2.6	14.5855	.652672
4	0	0	25.	14.7743	1.1	14.7715	.288428
5	0	0	33.3333	14.5372	360.	14.5372	-6.97E-03
6	0	0	41.6667	13.9121	359.	13.9101	-.237826
7	0	0	50.	12.9196	358.2	12.9133	-.404892
8	0	0	58.3333	11.5817	357.5	11.5705	-.507921
9	0	0	66.6667	9.92159	356.8	9.90653	-.546518
10	0	0	75.	7.96252	356.3	7.9455	-.520306
11	0	0	83.3333	5.72007	355.7	5.704	-.428395
12	0	0	91.6667	3.18184	355.2	3.17059	-.267315
END	0	0	100.	0	0	0	0
GND	37.6222	-103.366	0	13.4094	164.9	-12.9446	3.50003
14	37.6222	-103.366	8.33333	14.4611	160.5	-13.632	4.8261
15	37.6222	-103.366	16.6667	14.8651	158.1	-13.7936	5.54157
16	37.6222	-103.366	25.	14.863	156.3	-13.6124	5.96763
17	37.6222	-103.366	33.3333	14.491	154.9	-13.1222	6.14788
18	37.6222	-103.366	41.6667	13.7693	153.7	-12.3441	6.10059
19	37.6222	-103.366	50.	12.7163	152.7	-11.2973	5.83757
20	37.6222	-103.366	58.3333	11.352	151.8	-10.0018	5.36951
21	37.6222	-103.366	66.6667	9.69789	151.	-8.47893	4.7071
22	37.6222	-103.366	75.	7.77439	150.2	-6.74823	3.86038
23	37.6222	-103.366	83.3333	5.59379	149.5	-4.82213	2.83506
24	37.6222	-103.366	91.6667	3.14161	148.9	-2.69005	1.62276
END	37.6222	-103.366	100.	0	0	0	0
GND	75.2444	-206.732	0	19.9063	221.9	-14.8194	-13.2907
26	75.2444	-206.732	8.25	20.4155	219.1	-15.834	-12.8872
27	75.2444	-206.732	16.5	20.3743	217.4	-16.1781	-12.3848
28	75.2444	-206.732	24.75	19.9058	216.1	-16.0878	-11.7227
29	75.2444	-206.732	33.	19.0368	214.9	-15.6057	-10.9024
30	75.2444	-206.732	41.25	17.7887	213.9	-14.7569	-9.93339
31	75.2444	-206.732	49.5	16.1845	213.1	-13.564	-8.8293
32	75.2444	-206.732	57.75	14.2505	212.3	-12.0507	-7.60639
33	75.2444	-206.732	66.	12.015	211.5	-10.242	-6.28186
34	75.2444	-206.732	74.25	9.50539	210.8	-8.16181	-4.8721
35	75.2444	-206.732	82.5	6.73985	210.2	-5.82602	-3.38866
36	75.2444	-206.732	90.75	3.70424	209.6	-3.22225	-1.82717
END	75.2444	-206.732	99.	0	0	0	0



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Figure 5C

**Radio Station KLOK • 1170 kHz, 50 kW Day, 5 kW Night, DA2  
San Jose, California**

**Expert MININEC Broadcast Professional  
Nighttime Method-of-Moments Modeling Data**

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MEDIUM WAVE ARRAY SYNTHESIS FROM FIELD RATIOS

Frequency = 1.17 MHz

	field ratio	
tower	magnitude	phase (deg)
1	1.	-93.
2	1.92	0
3	1.	93.

VOLTAGES AND CURRENTS - rms

source	voltage		current	
node	magnitude	phase (deg)	magnitude	phase (deg)
1	712.445	322.5	3.43068	283.
13	807.508	64.2	7.07749	7.6
25	272.164	166.4	4.04173	95.7

Sum of square of source currents = 156.392

Total power = 5,400. watts

TOWER ADMITTANCE MATRIX

admittance	real (mhos)	imaginary (mhos)
Y(1, 1)	.00471129	-.006683
Y(1, 2)	.00299077	9.0492E-05
Y(1, 3)	.000147503	-.00099249
Y(2, 1)	.00299078	9.0535E-05
Y(2, 2)	.0055954	-.00574914
Y(2, 3)	.00319596	.000243985
Y(3, 1)	.000147505	-.000992485
Y(3, 2)	.00319595	.000243975
Y(3, 3)	.00549868	-.0071265

TOWER IMPEDANCE MATRIX

impedance	real (ohms)	imaginary (ohms)
Z(1, 1)	59.8956	100.564
Z(1, 2)	17.2365	-32.9643
Z(1, 3)	-24.4781	-5.21652
Z(2, 1)	17.2359	-32.9644
Z(2, 2)	59.2677	95.9074
Z(2, 3)	17.0806	-32.2408
Z(3, 1)	-24.4781	-5.21636
Z(3, 2)	17.0807	-32.2408
Z(3, 3)	57.5965	88.3503



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Figure 6A

**Radio Station KLOK • 1170 kHz, 50 kW Day, 5 kW Night, DA2  
San Jose, California**

**Expert MININEC Broadcast Professional  
Nighttime Method-of-Moments Modeling Data**

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KLOK Night

**GEOMETRY**

Wire coordinates in degrees; other dimensions in meters  
Environment: perfect ground

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.29	12
		0	0	100.		
2	none	110.	70.	0	.44	12
		110.	70.	100.		
3	none	220.	70.	0	.29	12
		220.	70.	99.		

Number of wires = 3  
current nodes = 36

	minimum	maximum
Individual wires	wire value	wire value
segment length	3 8.25	1 8.33333
radius	1 .29	2 .44

**ELECTRICAL DESCRIPTION**

**Frequencies (MHz)**

no.	frequency	step	no. of steps	segment length (wavelengths)
	lowest			minimum maximum
1	1.17	0	1	.0229167 .0231481

**Sources**

source	node	sector	magnitude	phase	type
1	1	1	1,007.55	322.5	voltage
2	13	1	1,141.99	64.2	voltage
3	25	1	384.899	166.4	voltage

**Lumped loads**

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	13	0	0	.0034	0	0
2	25	0	0	.0028	0	0
3	1	0	0	.0037	0	0

Resistivity (ohm-meter) = 0.0000002

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**IMPEDANCE**

normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 1, sector 1							
1.17	159.67	132.21	207.3	39.6	5.5147	-3.1853	-2.8421



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Figure 6B

**Radio Station KLOK • 1170 kHz, 50 kW Day, 5 kW Night, DA2  
San Jose, California**

**Expert MININEC Broadcast Professional  
Nighttime Method-of-Moments Modeling Data**

source = 2; node 13, sector 1  
1.17      62.583      95.148      113.88      56.7      4.7325      -3.7269      -2.3954

source = 3; node 25, sector 1  
1.17      22.225      63.544      67.319      70.7      6.1655      -2.8427      -3.1847

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CURRENT rms

Frequency = 1.17 MHz

Input power = 5,400. watts

Efficiency = 99.96 %

coordinates in degrees

current

no.	X	Y	Z	mag (amps)	phase (deg)	real (amps)	imaginary (amps)
GND	0	0	0	3.43812	282.8	.76459	-3.35202
2	0	0	8.33333	3.73112	275.9	.384983	-3.71121
3	0	0	16.6667	3.87118	272.	.136171	-3.86878
4	0	0	25.	3.9049	269.1	-.0591137	-3.90445
5	0	0	33.3333	3.8375	266.9	-.210806	-3.83171
6	0	0	41.6667	3.67185	265.	-.321928	-3.65771
7	0	0	50.	3.41135	263.4	-.393604	-3.38856
8	0	0	58.3333	3.06041	262.	-.426482	-3.03054
9	0	0	66.6667	2.62429	260.8	-.421193	-2.59027
10	0	0	75.	2.10841	259.7	-.378396	-2.07417
11	0	0	83.3333	1.51636	258.7	-.298412	-1.48671
12	0	0	91.6667	.84449	257.7	-.179893	-.825107
END	0	0	100.	0	0	0	0
GND	37.6222	-103.366	0	7.09348	7.5	7.03238	.929024
14	37.6222	-103.366	8.33333	7.51786	4.3	7.49685	.561721
15	37.6222	-103.366	16.6667	7.64556	2.5	7.63854	.327573
16	37.6222	-103.366	25.	7.57971	1.1	7.57841	.14048
17	37.6222	-103.366	33.3333	7.33769	359.9	7.33768	-9.61E-03
18	37.6222	-103.366	41.6667	6.92976	359.	6.92862	-.125755
19	37.6222	-103.366	50.	6.36556	358.1	6.36213	-.208894
20	37.6222	-103.366	58.3333	5.65549	357.4	5.64954	-.259371
21	37.6222	-103.366	66.6667	4.81056	356.7	4.80255	-.2774
22	37.6222	-103.366	75.	3.84119	356.1	3.83217	-.263167
23	37.6222	-103.366	83.3333	2.75366	355.5	2.74513	-.21655
24	37.6222	-103.366	91.6667	1.54112	354.9	1.53509	-.13617
END	37.6222	-103.366	100.	0	0	0	0
GND	75.2444	-206.732	0	4.04456	95.6	-.39744	4.02499
26	75.2444	-206.732	8.25	4.15209	94.6	-.334803	4.13857
27	75.2444	-206.732	16.5	4.14219	94.	-.287962	4.13217
28	75.2444	-206.732	24.75	4.04365	93.5	-.244734	4.03624
29	75.2444	-206.732	33.	3.86318	93.	-.203867	3.85779
30	75.2444	-206.732	41.25	3.60581	92.6	-.165316	3.60201
31	75.2444	-206.732	49.5	3.27672	92.3	-.129443	3.27416
32	75.2444	-206.732	57.75	2.88164	91.9	-.0967641	2.88002
33	75.2444	-206.732	66.	2.42661	91.6	-.0678464	2.42566
34	75.2444	-206.732	74.25	1.9174	91.3	-.0432497	1.91691
35	75.2444	-206.732	82.5	1.35788	91.	-.0234868	1.35768
36	75.2444	-206.732	90.75	.745375	90.7	-9.E-03	.74532
END	75.2444	-206.732	99.	0	0	0	0



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Figure 6C

**Radio Station KLOK • 1170 kHz, 50 kW Day, 5 kW Night, DA2  
San Jose, California**

**Sample System Proof**

**Sample Line Length**

Tower	Sample Line 3/4λ Resonance	Sample Line 5/4λ Resonance	Sample Line Length at 1210 kHz	Measured Impedance at at 1210 kHz with Toroid
1	1016.9 kHz	1694.8 kHz	310.7°	49.57 – j2.06 Ω
2	1016.9	1694.8	310.7°	49.48 – j2.13
3	1016.9	1694.8	310.7°	49.47 – j2.00

**Sample Line Characteristic Impedance**

Tower	-45° Offset Frequency	-45° Measured Impedance	+45° Offset Frequency	+45° Offset Impedance	Calculated Characteristic Impedance*
1	847.4 kHz	5.37 – j49.90 Ω	1186.4 kHz	8.04 + j49.68 Ω	50.3 Ω
2	847.4	5.39 – j50.16	1186.4	8.08 + j49.65	50.4
3	847.4	5.39 – j50.57	1186.4	8.07 + j49.83	50.7

\* Based upon the characteristic impedance formula:  $Z = ((R12 + X12)^{1/2} * (R22 + X22)^{1/2})^{1/2}$



**Radio Station KLOK • 1170 kHz, 50 kW Day, 5 kW Night, DA2  
San Jose, California**

**Reference Point Measurements**

**Daytime Radial 16.0°T**

Distance	Field (mV/m)	Coordinates (NAD27)	Description
2.45 km	760.0	37° 19' 57.4" N 121° 48' 30.4" W	NE corner of Glen Hanleigh & Glen Dundee
3.59 km	580.0	37° 20' 32.8" N 121° 48' 18.3" W	In front of 319 Flinthaven Dr.
4.58 km	330.0	37° 21' 03.7" N 121° 48' 08.3" W	In front of 3402 Rocky Mountain Dr.

**Daytime Radial 70.0°T**

Distance	Field (mV/m)	Coordinates (NAD27)	Description
2.20 km	670.0	37° 19' 06.7" N 121° 47' 34.0" W	In front of 2719 White Acres Dr.
3.00 km	520.0	37° 19' 14.4" N 121° 47' 04.0" W	In front of 3127 Mt Isabel Ct.
4.05 km	360.0	37° 19' 31.7" N 121° 46' 08.9" W	E. side of driveway for 3555 Coeur de Charles

**Daytime Radial 160.0°T**

Distance	Field (mV/m)	Coordinates (NAD27)	Description
3.00 km	370.0	37° 17' 09.7" N 121° 48' 16.3" W	0.14 mi E. on Hassler Pkwy from Dove Hill Rd.
4.25 km	198.0	37° 16' 32.4" N 121° 47' 59.4" W	On Coyote Rd., 100' west of Scarlett Ave.
5.40 km	164.0	37° 15' 56.1" N 121° 47' 42.3" W	At the intersection of Coyote Rd. and Tigerwood

**Daytime Radial 340.0°T**

Distance	Field (mV/m)	Coordinates (NAD27)	Description
2.18 km	600.0	37° 19' 45.6" N 121° 49' 29.2" W	SW corner of Ceylon Ave. and Ceylon Ct.
3.35 km	333.0	37° 20' 23.0" N 121° 49' 45.5" W	In front of 2154 Simon Ave.
4.77 km	250.0	37° 21' 05.5" N 121° 50' 05.3" W	NE corner of Bambi Ln. and Cottentail Ln.





**Radio Station KLOK • 1170 kHz, 50 kW Day, 5 kW Night, DA2  
San Jose, California**

**Reference Point Measurements**

**Nighttime Radial 20.0°T**

Distance	Field (mV/m)	Coordinates (NAD27)	Description
2.30 km	72.0	37° 19' 51.1" N 121° 48' 25.7" W	In front of 2462 Glen Duff Way
3.30 km	36.0	37° 20' 21.5" N 121° 48' 11.4" W	In E. entrance for Lake Cunningham Pk. @ S. White Rd.
4.58 km	28.0	37° 21' 00.8" N 121° 47' 55.0" W	In front of 3469 Mt Prieta Dr.

**Nighttime Radial 50.0°T**

Distance	Field (mV/m)	Coordinates (NAD27)	Description
2.00 km	10.5	37° 19' 23.4" N 121° 47' 55.6" W	Opp. 2866 Burdick Way
3.15 km	12.0	37° 19' 47.1" N 121° 47' 20.2" W	In front of 3308 Remington Way
4.05 km	7.4	37° 20' 05.6" N 121° 46' 51.6" W	In front of 3449 Cedardale Dr.

**Nighttime Radial 70.0°T**

Distance	Field (mV/m)	Coordinates (NAD27)	Description
2.20 km	20.0	37° 19' 06.7" N 121° 47' 34.0" W	In front of 2719 White Acres Dr.
3.00 km	15.1	37° 19' 14.4" N 121° 47' 04.0" W	In front of 3127 Mt Isabel Ct.
4.05 km	11.0	37° 19' 31.7" N 121° 46' 08.9" W	E. side of driveway for 3555 Coeur de Charles.

**Nighttime Radial 110.0°T**

Distance	Field (mV/m)	Coordinates (NAD27)	Description
2.00 km	16.50	37° 18' 18.9" N 121° 47' 42.3" W	SW corner of Ceylon Ave. and Ceylon Ct..
3.50 km	5.0	37° 18' 02.4" N 121° 46' 44.7" W	In front of 2154 Simon Ave.
4.65 km	6.2	37° 17' 50.8" N 121° 46' 00.5" W	NE corner of Bambi Ln. and Cottentail Ln.



Radio Station KLOK • 1170 kHz, 50 kW Day, 5 kW Night, DA2  
San Jose, California

Harmonic and Spurious Measurements

Frequency	dB below 1170 Carrier
750 kHz <sup>†</sup>	< -80
910 <sup>*</sup>	(KNEW)
2340	-86.4
2600 <sup>*</sup>	< -110
2760 <sup>†</sup>	< -110
3510	-109.9
3770 <sup>*</sup>	< -110
3930 <sup>†</sup>	< -110

Measurements made 1 km from station.

\* Possible intermodulation product with KLIV, 1590 kHz, located 4.9 km from KLOK. The adjacent channel signal of Radio Station KCBS was in the minima of the receiving antenna at the selected measurement location.

† Possible intermodulation product with KVVN, 1430 kHz, located 4.9 km from KLOK.

